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Meek, S. E., and Goss, D. K.—A review of the American species of the genus *Trachynotus*. Ext. Proc. Nat. Sci., Phil., 1884. From the authors.

Wilder and Gage.—A starch injection mass. From the authors.

Newton, E. T.—On antelope remains in newer Pliocene beds in Britain. Ext. Quart. Journ. Geol. Soc., May, 1884. From the author.

Murray, J., and Renard, A. F.—Notice sur la classification, le mode de formation et la distribution géographique des sédiments de mer profonde.

—Les caractères microscopiques des cendres volcaniques et des poussières cosmiques et leur rôle dans les sédiments de mer profonde. Ext. du Bull. du Mus. Roy. d'Hist. Nat. de Belgique, 1884. Both from the authors.

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GENERAL NOTES.

GEOGRAPHY AND TRAVELS.¹

AMERICA.—*Results of the Greely Expedition.*—On May 13th, 1883, Lieut. Lockwood and Sergt. Brainard reached an island which has been named after the former (lat. $83^{\circ} 24' 30''$ N., long. $44^{\circ} 45'$ W). From an elevation of 2000 feet no land was seen to the north or north-west, but Cape Robert Lincoln in Greenland (lat. $83^{\circ} 35'$, long. 38°), was seen to the north-east. Animal life was found to be abundant, with scanty vegetation, like that of Grinnell land. Traces of hares, lemmings, bear, musk-ox, ptarmigan and snow-bunting were seen. The party was absent fifty-nine days. The latitude attained on this occasion was four miles farther north than the highest reached by the English. In another journey Lockwood and Brainard crossed Grinnell land, and from its western coast looked out on the Polar sea. The southern part of this land is covered with an immense glacier, which they named the Agassiz glacier. Sixty miles of land intervene between this and the northern ice-cap. While resting three days ninety miles from Beatrix bay, at the head of Archer fiord, they struck the head of a fiord from the western sea. This they named Greely fiord. From its center, in latitude $80^{\circ} 39''$, and longitude $78^{\circ} 30'$, they saw from the summit of a cliff, 2200 feet high, the northern shore terminate in a high headland, which they named Cape Brainard. To the south, some seventy miles distant, was Cape Lockwood, apparently upon a land which, as open water intervened, they thought to be separate from Grinnell land, and named Arthur land. In 1882 Dr. Pavy followed the Markham route, and was adrift in the Polar sea north of Cape Joseph Henry. Abandoning everything, he escaped to land. In 1883 Lieut. Lockwood was turned back by open water on the North Greenland shore. In 1882 Lieut. Greely made two trips into the interior of Grinnell land, and discovered Lake Hazen, some sixty miles long by ten wide. This large body of fresh-water is fed by the ice-caps of North Grinnell land, and discharges by Ruggles river into Weyprecht fiord, and thence into Conybeare bay and Archer fiord. From the summit of Mount Arthur (5000 feet) the contour of

¹This department is edited by W. N. LOCKINGTON, Philadelphia.

the land west of the Conger mountains convinced Lieut. Greely that Grinnell land tends directly south from Lieut. Aldrich's farthest in 1876. Ruggles river was open at its mouth in April. Winter quarters of Eskimo were found, and some relics showing that they had possessed dogs, sleds and iron. Mount Arthur is the highest point in Grinnell land, which has two ranges of mountains, the Conger and Garfield ranges, parallel to and beyond the United States range. Hares, birds, and musk-oxen were seen in plenty on this journey. In March of this year Sergeant Long, while hunting, looked from the north-west side of Mount Carey to Hayes' sound, and saw on the northern coast three capes to the westward of the farthest seen by Nares in 1870. This sound extends twenty miles farther west than is shown by the English chart, but is possibly shut in by land, which showed up across the western end.

Geysers of the Yellowstone.—*Science* tells us that a comparison of the thermal activity of the geysers in Yellowstone in 1878, with that displayed on previous years, is adverse to the theory of diminution in intensity. Mr. A. Hague reports an additional geyser in the Fire-hole basin, and another in the upper geyser basin. The first, situated on the broad inter terrace north-west of the mounds of the Fountain geyser, has a pool 90 to 100 feet across. The vent is near the west border, and throws up at its first burst a column of water eight feet in diameter and twenty-five or thirty feet high. There is apparently a second vent of lesser power. Dr. Peale, in 1878, suggested that this might be a geyser. It is named the Surprise. The new geyser in the Upper Basin is Spring No. 9 of the Emerald group, and throws the water to a height of from thirty to fifty feet. This is called the Cliff geyser.

AFRICA.—The Bahr-el-Ghazal.—Letters from Lupton Bey, dated November 5th and 6th, 1883, proves that up to that date he was alive and well, and actively engaged in fighting El Mahdi. Although these operations, with the impossibility of communication with Khartoum, have greatly hindered geographical exploration, Mr. Lupton has transmitted a sketch of his routes, and some valuable determinations of latitude, height, etc.

The river Kuta, which at Barusso (about 22° 50 E. long., and 5° 15 N. lat.) is from two to three miles broad, is formed by the junction of the Welle and the Mbomo. These two large rivers, the headwaters of the affluents of which rise close to those of the tributaries of the Bahr-el-Ghazal, and water the Niam-niam and Mangbutta countries, unite at Mabele, about thirteen hours march east of Barusso, and the Kuta is shown on the sketch map as flowing westward from the point of junction. Mr. Lupton opposes the theory that the Kuta is the Shary, from the fact that the latter river is only half a mile wide where it

flows into Lake Chad. The rivers Pango, Kuru and Biri do not flow into the Bahr-el-Arab, as marked on Dr. Schweinfurth's map, but into the Bahr-el-Jur, which, joining the Bahr-el-Arab, a little east of 29° W. long. and a little north of 29° N. lat. forms with it the Bahr-el-Ghazal. It appears that the death of the Dutch traveler, Mr. Schuver, was the penalty for his own rashness. The Nazir of Meshra, knowing that the hostile Denka blocked the road, wished to detain him, but he insisted on the right to free travel given him by the governor-general, and started for Jur Ghattas. The next day he and his party were killed by the Janghe or Denka. The tribes that have revolted are the Denka, Nuer, Dembo, and Mandala, who are mixed up with the Arabs.

The French on the Congo.—M. Dutreuil de Rhins, the representative in France of the French "mission" in West Africa, states that surveys have been made for 800 kilometers up the Ogowé, and thence from Franceville to the Alima. At the station of Alima-Leketj, work is progressing upon stone houses and sheds in which boats for the navigation of the Congo will be built. The Nconi, the Luete, and the Quillu have also been explored; and numerous journeys made in before unknown regions. The treaty concluded with the International Association has removed some of the greatest difficulties.

The Upper Congo.—Messrs. Bohm and Reichardt continuing their route after the death of Dr. Kaiser, November 19, 1882, have founded the station of Mpala. A map of the region between Tabora and Tanganyika has been made by M. R. Kiepert from the notes of Dr. Kaiser. The same geographer has mapped the route of Lieut. Wissman. On this map many positions and heights are carefully calculated, and the southern part of the Congo basin is shown to be a grand plateau, from which rise elevations of from 100 to 200 meters, forming the water-parting between the affluents of the great river.

ASIA.—*The Amu-Daria or Oxus.*—The Uzboi, the old bed of the Oxus, has been recently explored by General Glukhovskoi and his assistants. From a paper read by M. Sviridoff at St. Petersburg it appears that the Oxus is as large as the Volga at Simbirsk, and is navigable for more than 1000 miles. Its waters are charged with sediment, and its overflow causes the fertility of the Khivan oasis. At the same time its floods cause great damage in its lower course, particularly in its delta. In 1880 several towns were half destroyed. On the frontiers of the Khivan khanate the Daudan and Kunia-Daria are detached from the Oxus. The first is not perceptible at its commencement, which is covered by cultivated ground, but about sixteen miles from the main river it comes into sight, being filled with water from the canals of the Khanate. After a course of ninety miles, the Daudan is swallowed up by sand, but after crossing the Shamrat canal, it again

becomes a regular water-course and persists as far as the Sarikamish basin. Dry side canals, with traces of past cultivation, exist on the banks of the Daudan. The Kunia-Daria leaves the Amu Daria as a small water-course, winding in the broad hollows of the old channel, and extending as far as the dam of Kizil-Tokar. Beyond this stretches a dry water-course, but at the town of Kunia-Urgenj it again becomes a river, and is called the Urun-Daria. Dams for irrigation exist on this river. When the Amu-Daria is high it frequently overflows into the Karia and Urun-Darias. In 1878 the water thus poured into this channel raised the lakes of Sarikamish twenty-eight feet. South of the lakes of Sarikamish a broad flat valley is formed out of the saline marshes, and farther on this assumes the character of a river-bed. This is the Uzboi—the old course of the Amu-Daria. Deposits of a former river, masses of earth washed down by it, decayed roots and weeds on its banks, ruins of an aqueduct and other buildings, combine with its regular banks to prove it the former water way. M. Sviridoff concluded by stating his belief in the possibility of deflecting the Amu-Daria into its old bed, via the Uzboi, to the Caspian.

Mr. Carles's Journey in Corea.—Mr. Carles reports that Chimulpho, the port of Jenchuan, is rapidly building up. The Han river, distant twenty-four miles from Chimulpho, is navigable for junks of 100 tons to Mapu, the port of Soul. Mapu extends for some miles along the northern bank of the river, and is four miles from Soul. Soul, a city three miles long by half that width, is enclosed by massive walls of stone, twenty-five feet high, with two-story towers. The houses are of one story, built of wooden pillars which support a thatched roof. The spaces between the pillars are filled in with mud walls, which in the better class of houses are faced with stones, tied together with millet stalks and pointed with cement. The houses contain but little furniture, but are cleaner and warmer than those of Northern China. There is a marked absence of color in streets and houses.

In the north-east and north of Corea the country is well-wooded and watered, and fine timber is brought down the Ya-lu and exported to China. The highest peaks of the backbone of Corea seem to be to the south-east. The light porous soil of the valleys is highly cultivated, but the mountains north of Soul are strikingly barren. It seems to be impossible to purchase anything in Corea except during a fair. Mr. Carles says that the people everywhere have plenty of food, firewood, and cotton clothes, of which they wear strikingly little, with substantial mud-dwellings; beggars are rare, and the working classes are better off than in China; but great riches are uncommon. The women are kept in marvelous seclusion.

Arabia Petraea.—Mr. Hull has completed his journey through Wady-el-Arabah, the entire length of which he was not able to

traverse on account of the hostility of the Bedouins. From the lines of now abandoned beach which he has discovered at a height of sixty meters in the Gulfs of Suez and of Akabah, Mr. Hull believes that a communication existed between the Red sea and the Mediterranean in the time of the Exodus. He also believes that the level of the Dead sea was formerly 425 meters higher than it now is.

EUROPE.—The three provinces which have been added to Greece by the treaty of Berlin have at last an organized administration. They are named, after their chief places, Trikkala, Larissa, and Arta, but the two former are properly Upper and Lower Thessaly, and the last is a small portion of Epirus. Trikkala has 117,229 inhabitants; Larissa, 144,621, and Arta only 31,178.

Australia.—Mr. Lindsay's explorations in Arnheim land, north-west of the Gulf of Carpenteria, have resulted in the discovery of much good land, and of some new rivers. Following the coast northwards from the Roper, a river called Parsons or Rose was found, with good ground at its head. The Walker, a river not indicated in the survey map of 1880, was followed for forty miles through a mountainous and beautiful country. Across the water-parting from this river, another fine river was reached, and was followed until it was found to be the Goyder, the mouth of which was all that was before known. The district around this river is fitted for grazing, agriculture or sugar-growing. The Blythe is another fine river, but the Liverpool, which looms large on the chart, does not run at twenty-miles from the sea. The party had much difficulty with the natives, who speared four horses, and suffered much from want of water on the Liverpool, and in other places between the rivers.

GEOGRAPHICAL NOTES.—Mr. E. G. Ravenstein has contributed to the Proceedings of the Royal Geographical Society a résumé of all that is known respecting Somal and Galla land, embodying information collected by the Rev. Thos. Wakefield.—Mr. A. M. Mackay has undertaken a boat voyage from Uganda to Kagege, along the western shore of Lake Victoria Nyanza, and has explored Jordan's Nullah, the position of which is erroneously marked on all published maps. He believes that the height of the lake given by Stanley (3800 feet) is 300 feet too much.—Mr. Selons has recently explored a tract of elevated country lying near the headwaters of the Sabi, and between the Manyame and the Hazœ, tributaries of the Zambesi. This region is a dome-like plateau saturated with springs which form the sources of the neighboring rivers, and seems to be the highest land in south-eastern Africa. The wind is sharp and cold, droughts and famines are unknown, and the natives get abundant and diversified crops. Mr. Selons thinks it well adapted for European occupation.—M. Giraud has been compelled to retreat to

Karema on account of the hostility of the natives. He descended the Luapula for some distance, and found that, as shown in Ravenstein's map of Eastern Equatorial Africa, this river flows out of the south-west side of Lake Bangweolo.—Dr. Pogge died at St. Paolo de Loanda on March 17th.—The bay of Angra Pequena, 27° N. lat., on the coast of Great Namaqua land, has recently been taken possession of by Germany. It is curious that upon the maps, even on those of the Germans themselves, this spot is marked as belonging to England.—Robert Flegel continues his explorations of the Niger and the Benua. While waiting for funds, he joined the Swiss explorer, Zweifel, in a voyage upon the lower course of the Niger. This exploration has given us a map of the Niger and its affluent the Amambara. On his return to the coast M. Flegel found himself able to continue his work, and reached Loko on September 11th.

GEOLOGY AND PALÆONTOLOGY.

OBSERVATIONS ON THE PHYLOGENY OF THE ARTIODACTYLA DERIVED FROM AMERICAN FOSSILS.¹—I have maintained² that the Selenodont dentition is a derivation of the bunodont, a proposition which seems unavoidable from a mechanical point of view. The testimony of palæontology is also in its favor since in America the oldest Artiodactyle, *Pantolestes*, is Bunodont. Kowalevsky, in the phylogenetic table given in his monograph of *Anthracotherium*³ does not commit himself as to this point, but allows the development of the two types of dentition to appear to have been contemporary and from some common origin. He then derives from such a common point of departure, first, the Hyopotamidæ, which first appeared in the Eocene, and second, the ancestors of Anoplotheriidæ. From the Hyopotamidæ he derives all the modern Selenodonta, exclusive of the Camelidæ. The latter group he omits from his table, doubtless because his information on the subject was insufficient. The main line of origin of the Selenodonta is divided early in the Miocene time, the genus *Gelocus* giving origin to the Pecora, and the genus *Hyæmoschus* to the Tragulina.

In describing the characters of the genus *Pœbrotherium* for the first time, I remarked as follows:⁴ "The present genus is a more generalized type than *Gelocus*, and in its distinct trapezoid and distinct metacarpals represents an early stage in the developmental history of that genus. It also presents affinity to an earlier type than the Tragulidæ which sometimes have the divided metacarpals, but the trapezoides and magnum coössified. In fact *Pœbrotherium* as direct ancestor of the camels, indicates that the

¹ Portion of a paper read before the Amer. Asso'n Adv. Science, Phila., 1884.

² Journal Academy Nat. Sciences, Phila., 1874.

³ 1873 (? 4), p. 152.

⁴ Bulletin U. S. Geol. Surv. Terrs., Vol. I, No. 1, p. 16, Jan., 1874.